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COMPLETE SPECIFICATION.

Improvements in Extensible Supports for Drawers, Shelves and other Slidable Structures.

We, AUTOSSET (PRODUCTION) LIMITED, a Registered British Company, of 72 Stour Street, Birmingham 18, and CLAUDE MORIMER TOWNSEND, a British Subject, of the Company's address, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to extensible supports for drawers, shelves or other sliding structures (hereinafter referred to as drawers) adapted to be fully extended from a housing cabinet or other relatively fixed part in which the drawer or the like is mounted and which is hereinafter referred to as the "housing."

The type of extensible side support to which the invention relates comprises three main, telescopically related rigid elements made of steel, non-ferrous or plastics incorporating a supporting member or carcass strip adapted to be rigidly attached to a side of the drawer housing and provided with an upper and a lower parallel rail, a main slide, mounting sets of upper and lower rollers which engage the said rails, and a drawer slide adapted to be attached to the drawer and telescopically engaging the main slide by virtue of a longitudinal flange on the drawer slide running between and supported by sets of rollers on the main slide.

Ordinarily, the main slide and the drawer slide are capable of being extended only in one direction up to a stop and the primary object of the present invention is to make simple and inexpensive provision whereby the slides can be extended in opposite directions within predetermined limits.

According to the present invention in an extensible side support of the type referred to, the main slide and the drawer slides are mounted on rollers which permit of the slides

being extended and retracted relative to the main slide in opposite directions, releasable catch means being provided for limiting the extension in either direction.

According to another aspect of the invention, the main slide is provided with elastically loaded catches which, when the main and drawer slides are extended into predetermined positions in either of two opposite directions, operate automatically to lock the main slide to the supporting member and the drawer slide to the main slide whereas the retracting movements of the slides serve to release the catches and restore them into their initial positions.

According to one form of construction, the main slide is provided with two longitudinally spaced catches each in the form of a spring loaded lever of the first order, each lever arm terminating in a hook. The lower track of the supporting member is provided with two longitudinally spaced slots adapted to be engaged by hooked arms of the levers, when the slides are extended, and the main slide is also provided with corresponding openings through which their arms may pass in order to effect such engagements. The said flange on the drawer slide is also provided with two longitudinally spaced slots in one of which an arm of a lever can engage so as to limit the extension of the drawer slide. When the main slide and the drawer slide are to be retracted, the initial movement of the drawer slide causes a cam form on an arm of the forward lever to be engaged by the extreme forward end of the flange slot. As this occurs, the said arm is tilted downwardly out of the path of the slot it previously engaged so that the drawer slide can be retracted.

Extensible supports according to the invention are illustrated by way of example, upon the accompanying drawing wherein:—

Fig. 1 is a side elevation of the extensible support in a retracted condition.

Fig. 2 is a side elevation illustrating the extensible support of Fig. 1 in the extended condition.

Fig. 3 is an end view of Fig. 1.

Fig. 4 is a section of Fig. 1 taken on the line A—A.

Fig. 5 is a section of Fig. 2 taken on the line B—B.

Fig. 6 is a longitudinal sectional detail to a larger scale.

Fig. 7 is a perspective view illustrating a sliding drawer cabinet incorporating extensible supports seen in Figs. 1 and 2.

As will be observed by reference to the drawing, the extensible support illustrated comprises three main telescopically or extensibly related elements incorporating a housing or carcass strip 1, a main slide 2 and a drawer slide 3 made of steel, non-ferrous metal or thermosetting material. Carcase strips 1 are adapted to be secured in a generally horizontal plane to the interior side walls 4 of the cabinet 5, and the drawer slides 3 to the exterior of the sides of the drawer 6 (Fig. 7). The carcass strip 1 is provided with an upper rail 7 and a corresponding lower parallel rail 8 and the main slide 2 an upper and a corresponding lower longitudinal flange 9 and 10 which slidably engage the rails 7 and 8. The drawer slide 3 is provided on its upper longitudinal edge with a flange 11 which is directed towards the main slide 2. The latter is provided with spacedly arranged upper and lower rollers on axes which are perpendicular to the plane of said slide, these rollers comprising an upper set of rollers 12, 13, and a set of lower rollers 14, 15 and 16. These rollers may be made of nylon. The upper rollers 13 and the lower rollers 14, 16 engage respectively the upper and lower rails 7, 8 and support the slide 2 during extension and retraction movements relative to the carcass strip 1. The upper rollers 12 and the lower rollers 15 and 16 support the drawer slide 3 at its flange 11 during extension and retraction movements of the slide 3 relative to the main slide 2. The roller 12, which is the frontal roller of upper set, is elastically biased in a predetermined direction for urging the roller into contact with the top side of the flange 11 of the drawer slide 3. In the example illustrated, the roller 12 is mounted on a lever arm 16a which is pivoted at 17 to the main slide 2 and urged towards the flange 11 by a torsion spring 17a. The spring loading on the roller 12 is sufficiently powerful to urge this roller constantly and yieldingly into physical contact with the top side of the flange 11 while the lower relatively fixed frontal roller 15 engages the lower side of the flange 11. The result is that during extension and while the drawer slide 3 is being and

remains extended, when the stresses imposed on the slide are heavy, squeezing of the flange 11 is avoided. The lever arm 16a has a limited angular movement about its pivot 17, such movement being in perpendicular directions to the plane of the flange 11, and the spring load exerted on the roller 12 may be 7—8 lbs. or more.

It will be appreciated that the above form of construction of elastic bias on the roller 12 may be varied, for example, the roller may be carried on a spring-loaded sliding device. Whatever form of construction is adapted, the elastic bias on the roller 12 maintains the slides in their correct relative positions whether loaded or unloaded. An extensible side support having an elastically biased upper roller as described above forms the subject-matter of the claims of copending Application No. 1510/56 (Serial No. 801,255).

The main slide 2 is provided with longitudinally spaced pivoted catches 20 and 21, each catch being pivoted at 22 on an axis which is perpendicular to the plane of the slide 2. These catches 20, 21 which are constructed as bent levers of the first order and made of sheet metal, are biased by blade springs 23 which normally urge latching arms 24, 25 in a downward sense towards the flange 10 of the main slide 2. The upwardly directed arms 26, 27 of the levers 20, 21 terminate in hooks 28, 29. The lower track 8 of the carcass strip 1 is formed with longitudinally spaced slots 30, 31, and the lower flange 10 of the main slide 2 is formed with appropriately spaced slots 32, 33. The flange 11 of the drawer strip 3 is also provided with longitudinally spaced slots 34, 35 adapted selectively to be engaged by the hook 29 of the lever 21. The slots 30, 31, 32 and 33 are provided for reception of the latching arms 24, 25 of the levers 20, 21 when the main slide 2 and the drawer strip 3 are extended either to the right or to the left of the carcass strip 1, and thereby automatically to limit the extension of the drawer 6. The levers 20, 21 are arranged to be disengaged from the said slots as retracting motion of the slides 2, 3 takes place. As will be more easily observed from Fig. 2, the main slide 2 and the drawer slide 3 are extended in a normal manner to the right of the carcass strip 1 to a predetermined extent, and the latching arm 24 has snap engaged the slot 32 in the main slide 2 and the slot 31 in the carcass strip 1, which slots 32 and 31 have become coincident. The latching arm 25 has simultaneously snap engaged the slot 33 in the main slide 2 and the hook 29 has engaged the slot 34 in the flange 11 of the drawer strip 3, consequently, these arrangements serve to control the limits to which the main slide 2 and the drawer slide 3 can be extended relative to the carcass strip 1. When it is desired to close the drawer 6 and

thereby to restore the slides 2 and 3 in Fig. 2 into the position of Fig. 1, an initial inward movement of the slide 3 in the direction of the arrow (Fig. 2) causes an end of the slot 34 to engage a cam shaped or inclined tip of the lever 21 and to turn the arm 27 in a downward sense and consequently turn the companion arm 25 upwardly so that 25 and 29 are withdrawn from their holding position in the slots 33, 34, thus permitting retraction of the drawer slide 3. During progressive retracting movement of the slide 3, an end thereof engages the raised hook 28 of the lever 20, turning the arm 26 in a downward sense and consequently raising the other arm 24. As this occurs the latching arm 24 is raised and released from engagement with the coincident slots 31, 32 in the flange 10 of the main slide 2 and rail 8. The result is that the main slide 2 can be progressively retracted in the carcase member 1.

If it is desired to extend the main slide 2 and the draw slide 3 in an opposite sense to that above described, i.e. to the left of Fig. 2, and as indicated in dotted lines in Fig. 7, the latching arm 24 of the lever 20 is adapted to snap engage the slot 32 and the slot 30 when they become coincident and the hook 29 is adapted to engage the slot 35 in the draw slide 3 for limiting the extending movements of these slides. Similarly, when the slides 3, 2 are to be retracted an automatic releasing action similar to that above described will occur.

WHAT WE CLAIM IS:—

1. An extensible side support of the type referred to, wherein the main slide and the drawer slides are mounted on rollers which permit of the slides being extended and retracted relative to the main slide in opposite directions, releasable catch means being pro-

vided for limiting the extension in either direction.

2. An extensible side support of the type referred to, wherein the main slide is provided with elastically loaded catches which, when the main and drawer slides are extended into predetermined positions in either of two opposite directions, operate automatically to lock the main slide to the supporting member and the drawer slide to the main slide whereas the retracting movements of the slides serve to release the catches and restore them into their initial positions.

3. An extensible side support according to Claim 1 or 2, wherein the catches each consist of a spring loaded lever of the first order, each lever having one arm terminating in a latch and the other arm terminating in a hook.

4. An extensible side support according to Claim 3, wherein the lower track of the carcase member is provided with longitudinally spaced slots and the main slide with corresponding openings which are adapted to be brought into coincidence when the main slide is extended.

5. An extensible side support according to Claim 4, wherein the flange of the draw slide is provided with longitudinal slots adapted selectively to be engaged by a hook of a catch when the draw slide is in the extended position.

6. An extensible side support of the type referred to, and constructed and adapted to operate substantially as described with reference to the accompanying drawing.

For the Applicants:
GEORGE FUERY & CO.,
 Chartered Patent Agents,
 Newhall Chambers,
 3 Newhall Street, Birmingham 3.

PROVISIONAL SPECIFICATION.

Improvements in Extensible Supports for Drawers, Shelves and other Slidable Structures.

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This invention relates to extensible side supports for drawers, shelves or other sliding structures (hereinafter referred to as drawers) adapted to be fully extended from a housing, cabinet or other relatively fixed part in which the drawer or the like is mounted and which is hereinafter referred to as "housing."

The type of extensible side support to

which the invention relates comprises three main, telescopically related, steel, non-ferrous or thermoplastic elements incorporating a supporting member adapted to be rigidly attached to a side of a housing or the like, and provided with an upper and a lower parallel rail, a main slide mounting sets of upper and lower propelling rollers which engage the said rails and a drawer slide adapted to be attached to the drawer and telescopically engaging the main slide by virtue of a longitudinal flange on the drawer slide riding between and supported by sets of rollers on the main slide.

Ordinarily, the main slide and the drawer

slide are capable of being extended only in one direction up to a stop and the primary object of the present invention is to make simple and inexpensive provision whereby the slides can be extended in opposite directions within predetermined limits.

According to the present invention in an extensible side support of the type referred to, the main slide and the drawer slides are mounted on rollers which permit of the slides being extended and retracted relative to the main slide in opposite directions, stop means being provided for limiting the extension in either direction.

According to another aspect of the invention, the main slide is provided with elastically loaded catches which, when the main and drawer slides are extended into predetermined positions in either of two opposite directions, operate automatically to lock the main slide to the supporting member and the drawer slide to the main slide whereas the retracting movements of the slides serve to release the catches and restore them into their initial positions.

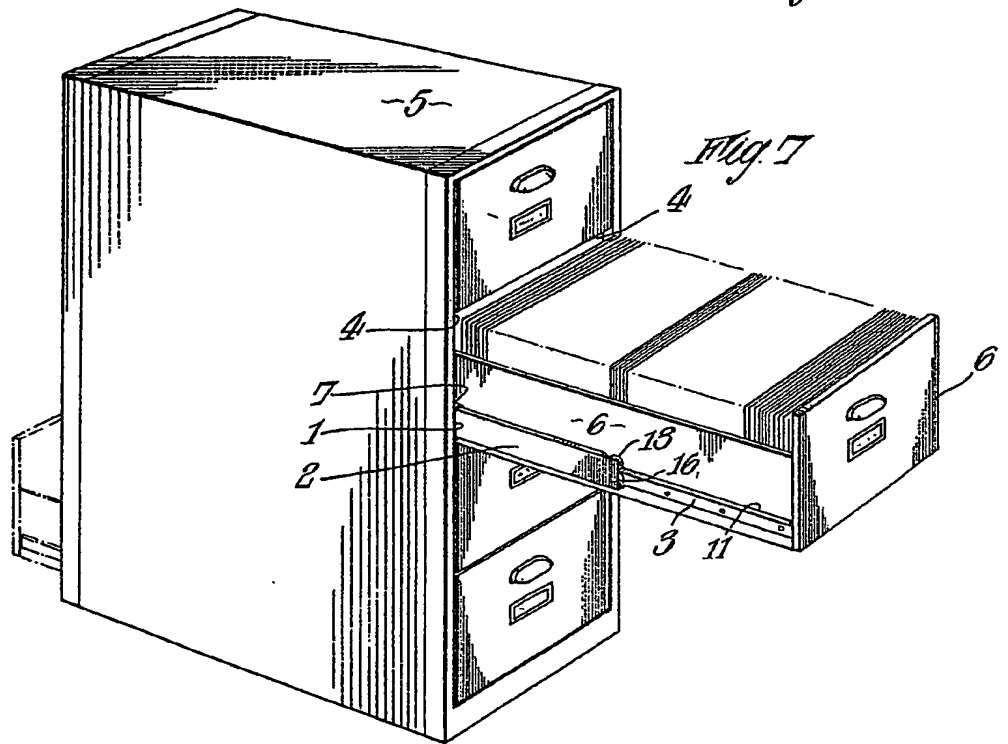
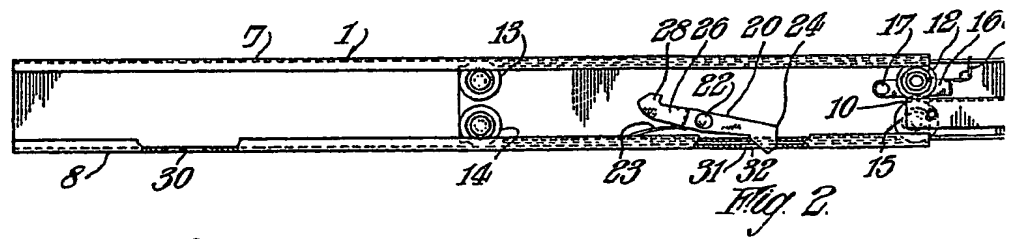
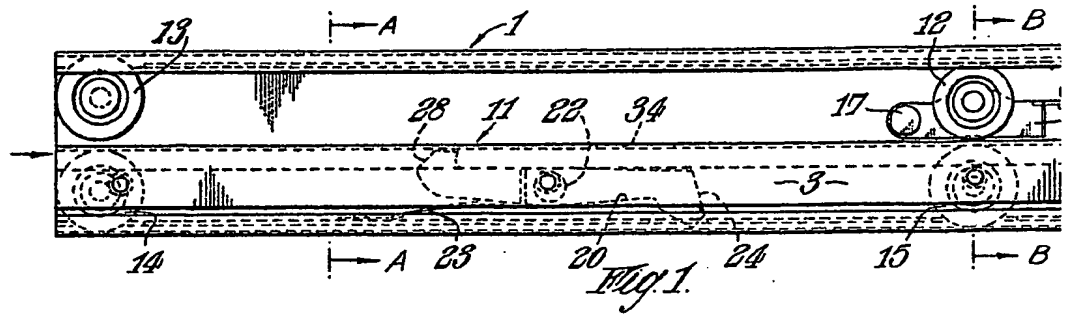
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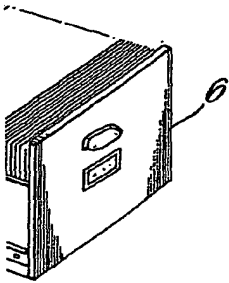
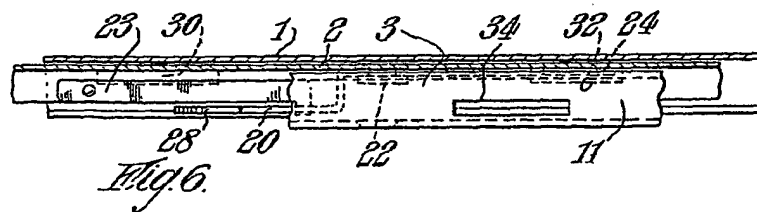
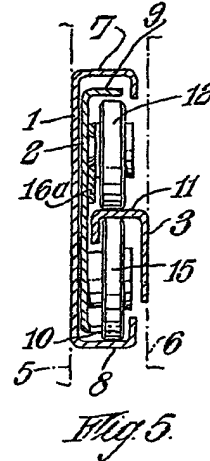
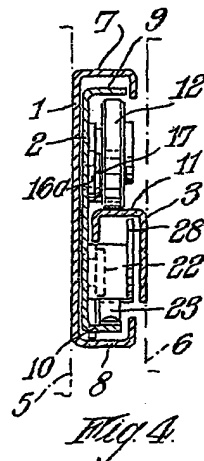
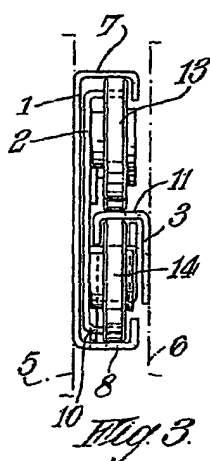
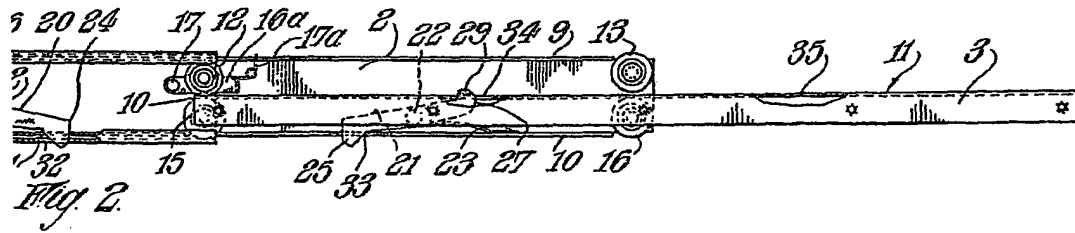
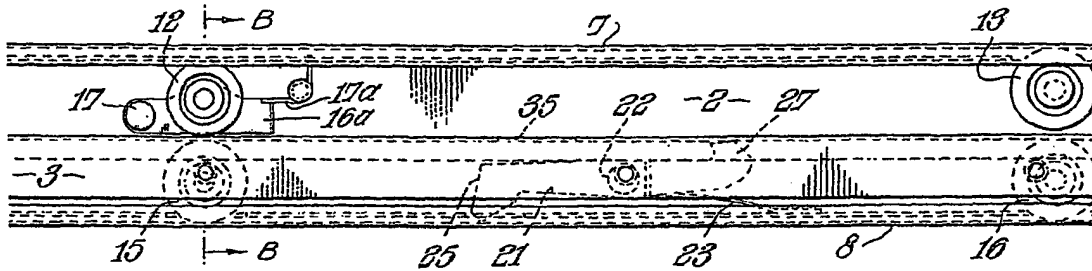
the forward lever to be engaged by the extreme forward end of the flange slot. As this occurs, the said arm is tilted downwardly out of the path of the slot it previously engaged so that the drawer slide can be retracted.

During the progressive retracting movement of the drawer slide, the inner end of its flange engages a hooked arm of the rear lever, thus depressing this arm and consequently lifting its other arm out of engagement with a slot in the main slide. The result is that the main slide can now be retracted and as this proceeds progressively, an arm of the forward lever is disengaged from a slot in the main slide due to an inclined plane or nose on this arm contacting an end of the main slide and tilting the said lever. The main slide can now be fully retracted with the inner slide telescoped therein. When the main and drawer slides are extended in an opposite sense relatively to the supporting member, the same limiting movements of the slides are effected automatically by the levers and when the slides are to be retracted the catches are again automatically released in the order above described.

It is preferred that at least one of the rollers of the upper set is elastically biased into contact with the top side of the flange on the drawer slide so that this roller is constantly urged under a yielding pressure into physical contact with the flange during the extending and retracting movements of the drawer slide. This elastically biased roller is more particularly described in our concurrent Application for Letters Patent No. 1510/56.

For the Applicants:
GEORGE FUERY & CO.,
Chartered Patent Agents,
Newhall Chambers,
8 Newhall Street, Birmingham 3.





803,331 COMPLETE SPECIFICATION
 1 SHEET
 This drawing is a reproduction of
 the Original on a reduced scale.

